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Everybody's doin' it (right?): Neighborhood norms and sexual activity in adolescence

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Abstract
A neighborhood's normative climate is linked to, but conceptually distinct from, its structural characteristics such as poverty and racial/ethnic composition. Given the deleterious consequences of early sexual activity for adolescent health and well-being, it is important to assess normative influences on youth behaviors such as sexual debut, number of sex partners, and involvement in casual sexual experiences. The current study moves beyond prior research by constructing a measure of normative climate that more fully captures neighborhood norms, and analyzing the influence of normative climate on behavior in a longitudinal framework. Using recently geo-coded data from the Toledo Adolescent Relationships Study (TARS), we analyze the effect of normative climate on adolescents' sexual behaviors. Results indicate that variation in neighborhood normative climates increases adolescents' odds of sexual debut and casual sex, and is associated with their number of sex partners, even after accounting for neighborhood structural disadvantage and demographic risk factors.

Keywords: adolescence, neighborhoods, sexual activity, norms, disadvantage

1. Introduction

Neighborhoods are important contexts in which adolescent risk behaviors unfold. Prior studies find that sexual activity, teenage pregnancy, substance use, delinquency, and violence vary significantly across neighborhoods (Billy et al., 1994; Shaw and McKay, 1942; South and Baumer, 2000). Neighborhoods are particularly important during adolescence, given youths' limited geographic mobility during this stage of development. Further, individuals and their micro-level relationships (e.g., family, friends, peer networks) exist within a larger macro-level context (Berkman et al., 2000; Bronfenbrenner, 1979), and these relationships and contexts interact over time (Bronfenbrenner, 2005, p. 108). Investigations of "neighborhood effects" have examined mechanisms through which various structural characteristics influence a range of behaviors and health outcomes. One mechanism through which communities affect behavior is the emergence, maintenance, and transmission of social norms that influence preferences for and meanings of particular behaviors, such as the appropriate age of sexual debut or the acceptable number of sex partners. Such norms define the boundaries of permissible behaviors (by encouraging or failing to discourage them), and provide justifications and rationalizations for behaviors that help establish them as favorable (see Akers, 2006 [1994]) or at least taken-for-granted.

The notion of a normative climate highlights that there are aggregate norms that exist independent of and apart from individually held attitudes (Mollborn, 2010, p. 304). As defined by Butler (2005, p. 428), "Normative climate can be conceptualized as the attitudes shared by members of a social group." These aggregate views and perspectives may affect individuals' own value systems and calculations of what counts as acceptable behavior, and in turn fig-

ure into decision making. The neighborhood normative climate may be particularly salient in adolescence, given that youths are strongly influenced by the attitudes and behaviors of similarly-aged others within their social environments (Giordano, 2003; Hartup, 1996; Warr, 2002).

The current study focuses on the effect of neighborhood normative climate[1] on the sexual behavior of adolescents, utilizing geo-coded data from two waves of the Toledo Adolescent Relationships Study (TARS). We operationalize neighborhood as the census tract, and measure the sexual normative climate by assessing the attitudes of the larger number of neighborhood youths that individuals are exposed to and influenced by—either directly or indirectly—encapsulating close friends, the "wider circle of friends" (Giordano, 1995), and even unknown others. Thus, this study builds on and extends findings from prior studies that have measured norms via adolescents' perceptions of close friends' attitudes and behaviors (e.g., Baumer and South, 2001; Browning et al., 2008; Manning et al., 2005; South and Baumer, 2000) and those that have used structural characteristics of neighborhoods (e.g., proportion Black or neighborhood poverty) as proxies for sexually permissive environments (e.g., Billy et al., 1994). We focus on adolescents who were not yet sexually active at their baseline interview to assess whether the neighborhood normative climate influences adolescents' sexual debut, and then focus on all adolescents who were sexually active by Wave II to examine the effect of normative climate on their reported number of sexual partners and likelihood of having sex outside of a dating relationship (casual sex). This study is responsive to scholars such as Eder and Nenga, 2003; Harding, 2008 who have called for research to explore adolescent socialization occurring outside the family and school setting.

2. Background

By the time teenagers reach age 18 or 19, most have had sexual intercourse. In 2008, 60% of female and 65% of male never-married 18–19 year olds had experienced sexual intercourse (Abma et al., 2010). Researchers have recognized variation in adolescent sexual experiences, including early onset of sex, frequency of sexual activity, and the relationships context of sexual behavior (Kusunoki and Upchurch, forthcoming; Manlove et al., 2007; Manning et al., 2005). Adhering to a risk framework, much research on adolescent sexual behavior has focused on multiple partnering and inconsistent condom and contraceptive use, both of which place adolescents at increased risk of pregnancy and sexually transmitted infections (Browning et al., 2005; Roche and Leventhal, 2009). Past research suggests that early onset of sexual activity has negative consequences for adolescents' well-being, including STI risk, mental health, and academic outcomes (Frisco, 2008, Kaestle and Halpern, 2007; Meier, 2007). Additional research finds that casual sex during adolescence is associated with inconsistent condom and contraceptive use, delinquency, and poor educational outcomes (Manlove et al., 2003; Manning et al., 2005; Seffrin et al., 2009). The implications of adolescent sexual experiences are also potentially long-term, such that teens with casual partners and/or numerous partners experience earlier union formation in early adulthood (Meier and Allen, 2009; Raley et al., 2007).

2.1. Neighborhood influence on adolescents' social environment

Neighborhood context is an important correlate of adolescent sexual behavior, given the link between neighborhood characteristics (particularly physical/social disorganization and structural disadvantage) and various problem behaviors and health-related outcomes (for a review, see Leventhal and Brooks-Gunn, 2000). Youths have limited geographic mobility and, accordingly, neighborhoods are part of an expanding circle of contexts (including families, friends, peer networks, and schools) to which individuals are exposed during adolescence (Arnett, 2000; Bronfenbrenner, 1989; Giordano, 1995; Manning et al., 2005). Therefore, we consider the social environment(s) in which adolescents' behaviors occur. Social structure is both contextual and relational (Entwisle et al., 2007); thus individuals' social interactions are embedded in larger social and cultural contexts. It is important to consider the placement of micro-level relationships within larger macro-level context (see, Berkman et al., 2000), the interactive nature of these contexts, and how individual-level characteristics emerge as a joint function of person-environment interactions over time (Bronfenbrenner, 2005, p. 108). Individuals and their families, for instance, are not randomly distributed into neighborhoods, and differences across neighborhoods in the prevalence and rates of certain risk behaviors are often found to persist even after individual- and family-level risk factors are considered.

Various mechanisms have been proposed to understand contextual influence on individual behavior. Models prominent in the social disorganization literature explore the role of social networks in linking neighborhood characteristics and adolescent risk behaviors (e.g., Baumer and South, 2001; Browning et al., 2004a; South and Baumer, 2000; South et al., 2003). These models highlight the power of peers—youths' proximal friends and their more distal age-mates—in the transmission of norms throughout networks and communities.

In his examination of the impact of structural conditions on inner city residents, Wilson (1987, 1996) observed that social isolation and neighborhood disorganization create a context within which certain norms, attitudes, and behaviors can develop and crystallize (see also Baumer and South, 2001), and a subculture can emerge that contrasts with the values of order and organization shared by the majority of residents (see also, Anderson, 1999). Structural charac-

1. It would be more accurate to refer to this as "neighborhood adolescent normative climate", because we measure the attitudes of adolescent respondents and their neighborhood peers/age-mates. However, this terminology is fairly cumbersome; therefore, for parsimony, we use the terms "neighborhood normative climate" or "normative climate", with the implied reference being individuals in the neighborhood who are of similar ages.

teristics of neighborhoods influence problem behaviors by facilitating the cultural transmission of attitudes and values that condone such behaviors (Haynie et al., 2006). As Brewster (1994b, p. 421) notes, "attitudes and values are the pathways through which contextual factors influence individual behaviors;" as such, youth who engage in certain behaviors may act as role models, providing encouragement and opportunities for other youth to engage in similar behaviors (Browning et al., 2004b). For instance, many youths in disadvantaged neighborhoods have sex earlier, have more partners, and use contraceptives less often than their counterparts in more advantaged neighborhoods (Baumer and South, 2001; Brewster, 1994a, 1994b).

Anderson (1999), in his qualitative account of inner city youth, observed "sex codes" among young male peer groups that encouraged early and frequent sexual activity as a sign of manhood and a source of respect. These subcultural values developed in response to blocked access to legitimate opportunities for attaining adult status. For girls, similar subcultural values existed, where premarital childbearing was viewed positively in disadvantaged communities, as the youths considered themselves as having very little to lose by getting pregnant (Anderson, 1999). Anderson argued that these subcultural values favoring early, frequent sex and childbearing were maintained and transmitted through the adolescent social networks within the neighborhood. As Jencks and Mayer (1990, p. 114) note, "The dominant norm about any given form of behavior derives, in turn, from observing what others do." As part of the socialization process, youth incorporate elements from both the wider adult culture and local peer cultures to which they are exposed (Adler and Adler, 1998; Harding, 2009).

It is typical to conceptualize peer influence as a process of active pressure. Indeed, some research on violence highlights that individuals may engage in violence in order to present themselves in a favorable manner to others. In their study of the effect of subcultures of violence on aggressive behavior, Bernburg and Thorlindsson (2005, p. 458) note that collective subcultural values and conduct norms pressure individuals to behave aggressively. Their finding of a significant effect of (individually aggregated) community-level values on aggressive behavior supports the notion that values and norms at the community level cannot be reduced to the individual (Bernburg and Thorlindsson, 2005; see also, Felson et al., 1994). Other research in this area suggests a more subtle process in which individuals actually internalize the norms and values found in their wider community. For instance, Harding (2009, p. 447) describes adolescent socialization as a process whereby individuals learn from, react to, and interact with their environment, choosing whether to internalize certain norms and adjust their behavior accordingly.

2.2. *The social environment of peer influence*

The link between peer influence and adolescent problem behaviors has been well-documented in past research drawing from social learning/differential association perspectives (e.g., Akers, 2006; DeCoster et al., 2006; Elliott et al., 1985; Giordano et al., 1986; Haynie, 2001, 2002; Sutherland, 1947). This link is reasonable given the importance of peers as agents of socialization, coupled with increases in the frequency of interaction between youths and their peers during adolescence (Warr, 2002). Much of the research on adolescence and peers has focused attention on small groups of close friends. Yet, at its core, a fundamental component of social learning is *exposure*, and there are many other actors in adolescents' social environments—beyond closest friends—and these individuals (via their attitudes and behaviors) contribute to the larger social (normative) climate. For example, in her research on youth gossip, Eder (1985) found that the transmission of information extends beyond the immediate circle of friends. Additionally, Payne and Cornwell (2007) found that youths' behavior was influenced not just by their close friends, but also by more distal peers (see also Giordano, 1995), further supporting the notion that information, attitudes, norms, and values can be and are transmitted through both strong and weak social ties (Coleman, 1988; Granovetter, 1973).

Adolescence is a time for increased interaction with close friends, but also increased interactions with other members in the social environment, across social networks. This interaction increases youths' knowledge of what constitutes desirable and undesirable behavior. As noted above, adolescent development occurs within multiple contexts, and all persons within a given context communicate normative standards. Interaction increases opportunities for adolescents to be influenced, but direct interaction is not necessarily required for influence to occur. Payne and Cornwell (2007) note that information can diffuse through social networks. This allows adolescents to learn about the behaviors and attitudes of less proximate peers without having direct contact with them (see also Berkman et al., 2000). That is, they may witness or hear about others while in common situational contexts such as at the gym or in the locker room, on the school bus or street corner, or at a shopping mall or party. They may also learn about others through the transmission of gossip (see also, Eder, 1985). It is important to recognize that while youth are likely to be influenced by their close peers, their attitudes and behaviors can be affected by other peers with whom they are not directly acquainted. This is particularly relevant for exploring the effects of neighborhood normative climates—while the attitudes and behaviors of all similarly-aged youth contribute to the normative climate, it is possible that youths will not have a personal friendship with or even know all of their neighborhood peers.

Prior studies have approximated neighborhood normative climates using adolescents' perceptions of their friends' attitudes and behaviors, often because of the limitations of available data (South and Baumer, 2000; Baumer and South, 2001; Browning et al., 2004b, 2008; Hoffman, 2002; Manning et al., 2005). While these studies confirm the significant effect of close friends on youths' behavior, this approach conceptualizes peer interaction and influence as consisting only of close friends and does not take into account the influence of less intimate ties—interactions with and exposure to other members of the social environment (Giordano, 1995). The normative climate is an emergent property of all actors in the context. It is important to note that the neighborhood normative climate refers to aggregate measures of attitudes and behaviors—while influenced by interpersonal friendship dyads and groups, the normative

climate is comprised of *all* individuals and relationships in the neighborhood, and thus should be thought of as larger than, and apart from, the relationships that adolescents have with their closest friends. As Jussim and Osgood (1989) found, relying on youths' perceptions of their friends risks researchers overestimating interpersonal influence. Youths are not always accurate judges of their friends' attitudes and behaviors, particularly with respect to judging others' sexual attitudes and behaviors, as youths have been found to perceive their peers as more sexually permissive than was actually the case (Chia and Gunther, 2006; Lambert et al., 2003).

Another convention in the measurement of normative climates has been to use neighborhood structural characteristics as proxies for normative climates (e.g., Billy et al., 1994; Brewster, 1994a, 1994b; Browning et al., 2008). These studies suggest that neighborhood disadvantage and/or the percentage of Black residents in adolescents' neighborhoods may be a proxy for normative climates favorable toward sex because sexually permissive attitudes are often observed in disadvantaged neighborhoods, and Black youths have been shown to hold more permissive attitudes about sex (Furstenberg et al., 1987). However, Browning and Burrington (2006) found that neighborhood disadvantage accounted for only 26% of the increased likelihood of holding pro-sex attitudes among Black youths compared to their White peers. Few studies have focused empirically on neighborhood norms, or attempted to assess the direct effect of these norms on individual behavior. One exception is a study by Musick and colleagues (2008); however, they measured the normative climates of parents and adults in the neighborhood, rather than of youths' age-mates. Another exception, although focused on adults, is a recent social network analysis by McDermott and colleagues (2009) which showed how the effect of divorce clustered in and was transmitted through individuals' social networks. As Mollborn (2010) notes, norms are difficult to operationalize from survey data; thus, these methods of measuring peer influence in terms of the neighborhood normative climate are not without limitations that should be considered if these measures are meant to gauge overall cultural scripts for behavior.

Adolescents are frequently influenced, in some way, by the many actors within any particular social context (e.g., neighborhood, school, etc.). Giordano (2003, p. 267) notes, "…by virtue of direct and indirect communication processes…adolescents learn a great deal about themselves, their social worth, and the broader cultural world they inhabit through experiences beyond the confines of close friendship", and suggests the need to develop more creative methods for measuring normative orientations that capture multiple sources of influence (see also Manning et al., 2005). A potentially useful method of measuring the neighborhood normative climate may be to ask neighborhood youth directly, thereby assessing the overall level of approval or disapproval for certain behaviors. This approach is beneficial because it "incorporates the concept of social expectations for behavior that is integral to the concept of norms" (Butler, 1992, p. 299). It is particularly useful when studying the effect of normative climates on intimate relationship behaviors, given that, as Collins (2003, p. 13) notes, adolescents' selection of dating partners is influenced by actual or anticipated reactions from peers, and peer cultures influence the timing of relationships and the activities expected and approved to occur within relationships. Recent research on substance use has utilized this approach, measuring school and neighborhood normative climates by aggregating the attitudes of individuals within a particular context (e.g., Kumar et al., 2002; Musick et al., 2008). This approach disentangles the individual from his/her larger cultural context/normative climate, a distinction that better allows the normative climate to represent a mechanism through which certain structural characteristics are transmitted that in turn influence individual behavior. Therefore, rather than focusing on friends as an "island", this aggregate measure includes more of the individuals who comprise the broader normative climates that youth must navigate.

There are limitations, however, to approximating group-level norms by aggregating individual attitudes. For instance, such an approach may overstate consensus (Duncan and Raudenbush, 1999; Musick et al., 2008; O'Brien, 1990)—neighborhoods are undoubtedly characterized by a fairly heterogeneous mix of value systems, and comprised of diverse norms and values (Harding, 2007; see also, Shaw and McKay, 1942). While there is likely no single normative climate, aggregating the attitudes of respondents' similarly-aged peers provides an *approximation* of the normative climate to which these adolescents are most attuned, given the important of peers at this stage of the life course, when youths' social world is shifting from family to peers (Harding, 2008; Warr and Stafford, 1991). Further, using measures that directly assess attitudes toward sexual activity is a more accurate approximation of normative climate than using structural measures (e.g., proportion of residents with a college education, percent Black) as proxies—a common practice in the literature (e.g., Apel et al., 2009; Billy and Moore, 1992; Ross, 2001).

2.3. Conceptualizing variation in normative climate and adolescent sexual behavior

As early as the 1960s, Reiss (1967) suggested that attitudes toward premarital sexual behavior among adolescents were increasingly permissive, but in positing this change, did not argue that young people were free from normative constraints and considerations. The most conservative attitude remains that sex should only occur within the context of marriage, but even where young people had developed more liberal attitudes, Reiss noted that many teens still endorsed the idea of sex as only appropriate within the context of a committed or love relationship. Conversely, "casual" sex with someone with whom one is not in love could still be a basis for derision or garnering a negative reputation.

In an analysis of adolescent norms about love and sexuality, Simon and colleagues (1992) not only highlighted these aspects of "climate", but suggested that the young women in their study also believed that it was inappropriate to date more than one person at a time. Thus, norms about dating and romance, even when not explicitly referencing sexuality, nevertheless have implications for when and how sexual behavior unfolds (since the latter cultural belief about relationship concurrency could serve to slow the level/pace of adolescent exposure to sexual risk (see e.g., Ford et al., 2002)). Ethnographic descriptions such as those by Anderson (1999), highlighted above, suggest that

such relatively conservative attitudes may not characterize the attitudes and beliefs of youths in disadvantaged neighborhoods. However, even within relatively disadvantaged contexts, normative climates may vary (e.g., see Harding, 2007), and as such, the normative climate cannot be simply inferred from indices gauging the level of poverty (or affluence) in a given context.

2.4. The current study

The current study focuses on adolescents' sexual behaviors, emphasizing the neighborhood normative climate as a mechanism for the transmission of norms about sex and intimate relationships. Normative climates represent aggregate measures of the behaviors and attitudes of community members and refers to *objective influence*—influence based on others' actual attitudes (Jussim and Osgood, 1989). We examine variation in the permissiveness of attitudes across youths' neighborhood peers in order to determine whether these attitudes influence teens' own sexual behavior—both in general, and once level of neighborhood disadvantage has been taken into account. This investigation extends past research by measuring neighborhood sexual normative climate directly—aggregating adolescents' attitudes toward sexual behaviors. Recognizing that the vast majority of teens eventually garner some sexual experience, we assess the impact of normative climate on three measures of sexual behavior: sexual debut (first intercourse), involvement in casual sex (that is, sex with someone other than a dating partner), and the total number of sexual partners reported.

3. Methods

The effect of normative climate on adolescent sexual behavior is examined using survey data from the Toledo Adolescent Relationships Study (TARS) merged with newly appended 2000 US Census data. TARS is a longitudinal study that explores adolescents' and young adults' relationships with parents, peers, and romantic partners and examines dating, cohabitating, and marital relationships in adolescence and emerging adulthood. TARS has advantages over other adolescent datasets, such as the National Longitudinal Study of Adolescent Health (Add Health), making it suitable for the current analysis. For example, TARS surveyed respondents on numerous measures related to their attitudes about dating, romantic relationships, and sexual activity, allowing us to calculate a measure of sexual normative climate that is more robust than previous measures such as adolescents' perception of the proportion of their friends having sex or whether their friends would respect them if they had sex.

The sample for the TARS was drawn from the enrollment records of registered students in the 7th, 9th, and 11th grades in Lucas County, Ohio (n = 1321), an area that includes the city of Toledo as well as surrounding suburban and rural areas. Data from the 2000 US Census indicate that Lucas County's socio-demographic profile is similar to national averages in terms of education, median family income, marital status, and racial distribution. The county has a population of just over 455,000, and the majority of its residents are White (78%), although there are several neighborhoods (census tracts) with high proportions of Black residents (e.g., over 90% of residents). Approximately 14% of individuals in the county live below the poverty line, but there are neighborhoods (concentrated toward the center of downtown Toledo) where as many as 70% of residents are living in poverty, and other neighborhoods (in more rural and suburban areas) where less than 1% of residents live in poverty. While prior studies of adolescent sexual activity have focused predominately on urban, disadvantaged neighborhoods (e.g., Anderson, 1999; Browning et al., 2008), a key strength of the TARS sample is that it is comprised of an array of affluent and disadvantaged urban, suburban, and rural neighborhoods. A stratified, random sample was obtained (constructed by the National Opinion Research Center), over-sampling Black and Hispanic youths (for which we adjust in our multivariate analyses by including control variables for Black and Hispanic race/ethnicity (see, Winship and Radbill, 1994)). Interviews were conducted primarily in respondents' homes using laptop computers preloaded with the survey questionnaire. Respondents were ages 12–19 at Wave I (2001) and 13–20 at Wave II (2002). A primary caregiver was also interviewed at Wave I.

Contextual data from the 2000 US Census were appended to the TARS data. Respondents' residential addresses were geocoded (that is, physical addresses were matched to their corresponding census block group and tract number) using the GeocodeDVD software from GeoLytics®. We measure neighborhood as respondents' census tract. While there has been considerable debate in the literature (e.g., Hipp and Perrin, 2006; Sampson et al., 2002) over the best methods for measuring neighborhoods, they are frequently defined in terms of census tracts. Studies have used smaller units of analysis, such as census blocks or streets (Grannis, 1998), with others combining tracts into larger neighborhood clusters (Sampson et al., 1997; Stewart and Simons, 2006); however, Land and colleagues (1990; see also Wooldredge, 2002) have found consistency in structural processes across geographic unit of analysis (city, county, state). The use of census tracts as proxies for neighborhoods is a common approach in the "neighborhood effects" literature, given that tracts are often sizable and with recognizable boundaries (Mollborn, 2010; Sampson et al., 1997).

The current analysis uses data from respondents interviewed at Waves I and II, with contextual data matched to respondents' Wave I residence, measured at the census tract level. We focus on the first two waves of TARS because sexual behavior at this point in time corresponds to early sexual activity, given the age of survey participants (mean age = 15). Early sexual activity is associated with many negative consequences for adolescents' health and well-being, including STI risk, mental health, and academic outcomes (Frisco, 2008; Kaestle and Halpern, 2007; Meier, 2007). Casual sex during adolescence is also associated with inconsistent condom and contraceptive use, delinquency, and poor educational outcomes (Manlove et al., 2003; Manning et al., 2005; Seffrin et al., 2009).

The analytic sample excludes individuals living in census tracts with fewer than five survey participants (79 respondents spread across 29 tracts), to allow for meaningful aggregation of neighborhood-level sexual normative climate (following Maimon and Kuhl, 2008). Data from these 1242 respondents (who were distributed across 100 neighborhoods) were used in constructing the neighborhood normative climate (discussed below). Although TARS is not a school-based survey, there is a fair degree of overlap between the schools respondents attend and their neighborhoods. For example, at Wave I, respondents were distributed across approximately 58 middle and high schools. The mean number of census tracts feeding into each school was 6, with a median of 3.5—that is, 50% of these schools were attended by respondents from 3.5 different census tracts; 25% of schools were attending by respondents from only 1 tract. When examined from the perspective of the census tract, the median number of schools within each of the 100 tracts in our sample was 3. It is important to note that TARS respondents at Wave I were attending middle and high schools, so the schools in a given tract could have easily been split across some combination of middle and high schools. Given this, we believe the likelihood that similarly aged peers from the same census tract would be attending different schools to be minimal.

For the multivariate analyses, the analytic sample excludes respondents who did not participate in the Wave II follow-up, since they had missing data for the dependent variables (n = 136), and individuals missing data on the independent variables of interest (n = 30). Analyses indicated that respondents not re-interviewed at Wave II did differ from respondents interviewed at both waves on demographic and neighborhood characteristics; however, we control for these measures in the multivariate analyses which reduces problems of biased estimates due to sample attrition. Because we are interested in the effects of sexual normative climate on sexual debut, it is necessary to exclude from the analysis of debut those individuals who reported being sexually active at Wave I (n = 317). This allows us to better disentangle the relationship between attitudes and behaviors, given that attitudes both influence behavior and are influenced by behavior (Browning et al., 2008). These already sexually active respondents differ from Wave I virgins in that they are more likely to be male, older, and a racial/ethnic minority. They also reside in neighborhoods with higher levels of disadvantage and more permissive normative climates. Thus, excluding these individuals results in a more conservative test of the effect of normative climate on adolescent sexual debut, since individuals exposed to more permissive attitudes have been removed from the analyses, thus slightly reducing the variance in the normative climate measure.

Since engaging in casual sex and the accumulation of sexual partners is contingent on sexual debut, it was not necessary to exclude these already sexually active respondents from the models examining casual sex and number of partners. These analyses are subset to all respondents who reported being sexually active by Wave II. We exclude respondents reporting a race/ethnicity other than White, Black, or Hispanic (n = 30) because there are too few cases for meaningful comparisons and model estimates became unstable. The model for sexual debut is estimated for the 720 respondents who were virgins at Wave I; models for casual sex and number of partners are estimated for the 505 respondents who became sexually by Wave II (and were not missing data on the outcome of interest). Respondents were distributed across 100 neighborhoods, with 11 persons per neighborhood, on average.

3.1. Measures

3.1.1. Dependent variables (Wave II)

We analyze three measures of adolescents' sexual behaviors at Wave II. *Sexual debut* is a dichotomous variable coded 1 for respondents who answered affirmatively to the question "Have you ever had sexual intercourse (sometimes this is called 'making love,' 'having sex,' or 'going all the way')?" Respondents reporting "no" are coded 0. *Casual sex* is measured by asking respondents who report having ever had sex at Wave II, "In your lifetime, how many different girls [guys] have you had sex with that you weren't really dating or going out with?" Because this variable is highly right-skewed, we dichotomize it into 1 = one or more partners; 0 = no partners. *Number of sex partners* is measured by asking sexually active respondents, "In your lifetime, how many sexual partners have you had?" Number of sex partners refers to sex both within and outside of dating relationships. It is a continuous measure, but because of skewness, we truncate it at its 95th percentile; the resulting measure ranges from 1 to 11. Other operationalizations, such as a multinomial model comparing 1, 2, and 2+ partners produced results similar to those presented below.

3.1.2. Independent variables (Wave I)

3.1.2.1. Neighborhood normative climate. The primary independent variable is youths' neighborhood *normative climate* at Wave I. Although we exclude from our multivariate analyses respondents who did not participate at Wave II, it is still important to include the attitudes of these respondents in the calculation of their neighborhood normative climate. Therefore the measure of normative climate is based on responses from *all* respondents residing in a neighborhood with at least five other TARS respondents (Maimon and Kuhl, 2008); this is 1242 respondents distributed across 100 neighborhoods, with an average of 12 respondents per neighborhood. Normative climate is measured by aggregating to the neighborhood-level the individual scores on a sexual attitudes scale. The sexual attitudes scale is a summated scale comprised of responses to four items drawn from Snyder and colleagues' (1986) scale: (1) "A person should only have sex with someone they love" (reverse-coded); (2) "A person should only have sex if they are married" (reverse-coded); (3) "I would have to be committed to a girl/guy to have sex with her/him" (reverse-coded); (4) "I would feel comfortable having sex with someone I was attracted to but did not know well" and one additional item: (5) "It's ok to date more than one person at a time." Response options for each item range from 0 = strongly disagree to 4 = strongly agree. Results from an exploratory factor analysis of these five items showed that they all loaded

on a single factor. We include the fifth item ("It's ok to date more than one person at a time") because it reflects an individuals' propensity toward relationship non-exclusivity (cheating) and, by extension, can be thought to gauge ones' propensity toward sexual non-exclusivity. Several studies (e.g., Drumright et al., 2004; Feldman and Cauffman, 1999; Javabakht et al., 2010; Treas and Giesen, 2000; Wiederman and Hurd, 1999) have illustrated the link between cheating (also referred to as relationship concurrency) and (risky) sexual activity. The summated scale ranges from 0 to 28 and shows adequate internal reliability (Cronbach's $a = 0.66$).

The items are coded such that higher scores on the scale correspond to more permissive sexual attitudes. Two of the five scale items capture (dis)agreement with value-statements about sex (only having sex with someone you love, only having sex if married), two items capture (dis)agreement with assessments of hypothetical personal sexual behavior (having sex in a committed relationship, having sex with someone not known well), and one item captures respondents' attitudes toward relationship non-exclusivity. This summated scale is aggregated (that is, we calculate the mean) at the neighborhood-level and each respondent is assigned his/her neighborhood mean score (the average of his/her individual score and the scores of all other survey respondents in that neighborhood, as is necessary to create a neighborhood-level score for the HLM analyses described below)—thus capturing the neighborhood's sexual *normative climate*.[2]

3.1.2.2. Neighborhood disadvantage. While some research (as discussed above) has used neighborhood disadvantage as a proxy of permissive sexual attitudes, our analyses include a more direct, objective measure of neighborhood-level attitudes, allowing us to test whether norms and disadvantage exert independent effects on youths' sexual behavior. To explore independent effects of normative climate and disadvantage, our models include *neighborhood disadvantage,* a mean scale consisting of the tract-level proportion of female-headed households, households below the poverty line, proportion of the population over the age of 16 unemployed, and the proportion of households receiving public assistance (Cronbach's $a = 0.96$).

3.1.2.3. Demographic characteristics. Respondents' race/ethnicity is measured via dummy variables for *Black* and *Hispanic*, with White as the reference category. *Age* at Wave I, a continuous measure ranging from 12 to 19 is included, and mean-centered. Gender is measured as a dummy variable for *female*. Relationship status is measured via responses to the question: "Is there someone you are currently dating—that is, a girl [guy] you like and who likes you back?" Respondents answering "yes" are coded 1 on a dummy variable for *currently in a relationship*.

3.1.2.4. Family background. Respondents' childhood family structure (taken from the baseline interview) was originally a series of dummy variables for two biological parents, one biological parent, stepparent, and other family structures. Exploratory analyses revealed that the strongest distinction, with respect to adolescents' sexual behaviors, was between youth living with both biological parents and youth living in all other arrangements. Because of this, and for parsimony, a dummy variable for youth living with *two-biological parents* (0 = no; 1 = yes) is used. Mother's education, derived from the Wave I parent interview, is used as a proxy for respondents' family of origin socioeconomic status. It is measured with dummy variables for *less than high school* and *more than high school*; a third dummy variable is included (but not reported in the tables) to retain respondents who were missing on this measure ($n = 51$, 7.0%)—*high school graduate* is the reference category.

Findings are mixed on the relationship between parents' behavior and adolescents' sexual activity, with some studies finding a protective effect of parental monitoring, while other studies find higher rates of sexual activity among youth with stricter parents (Roche and Leventhal, 2009). Social control models posit that individuals will be motivated to engage in potentially risky behavior unless they are constrained by social bonds and supervision which regulates their behavior (South and Baumer, 2000). Thus parents can regulate their children's behavior by monitoring. We control for *parental monitoring*, which is measured as a 6-item mean scale assessing whether adolescents' parents let them make decisions about the time they must be home on weekend nights, the people they hang out with, what they wear, their social life, who they can date, and how often they can date (original response options ranging from 0 = never to 4 = very often are reverse-coded so that higher scores correspond to greater parental control and less adolescent autonomy; Cronbach's $a = 0.80$).

3.2. Analytic strategy

Hierarchical generalized linear models (HGLM) are used to account for the complex error structure of the clustered data, given that adolescents are nested within neighborhoods, and to estimate the multilevel association between normative climate and adolescents' sexual behaviors. Multilevel models are necessary when individuals are nested within neighborhoods and the analysis aims to examine associations between macro-level characteristics and micro-level behaviors (Hoffman, 2002), as is the case here. We use logistic regression for the two dichotomous outcomes (sexual debut and casual sex) and negative binomial regression for the count of sex partners (Bryk and Raudenbush, 1992). The

2. Since TARS oversampled Black and Hispanic youth, we explored whether it was necessary to weight the sexual normative climate measure. The weighted measure was highly correlated with the unweighted measure ($r = 0.99$) and analyses using the weighted measure produced results nearly identical to analyses using the unweighted measure. Because of this, and because five respondents were missing sample weights, we present estimates based on the unweighted measure of normative climate.

Table 1. Descriptive statistics for analytic sample, Toledo Adolescent Relationships Study (TARS), Waves I and II, means, standard deviations, and proportions (Level-1 n = 720, Level-2 n = 100).[a]

	Full Sample			Wave II sexual debut	No sexual debut	
	Mean	SD	Range	Mean	Mean	p
Level-2 indicators						
Normative climate[b]	6.363	1.631	2.60–11.80	6.409	5.929	***
Neighborhood disadvantage[b]	15.180	10.454	2.35–48.37	15.788	11.852	***
Percent black[c]	23.056	31.576	0.00–98.20	24.239	14.236	***
Level-1 indicators						
Individual characteristics						
Demographics						
Age	14.667	1.602	12.00–19.00	15.383	14.388	***
Male[d]	0.465			0.444	0.473	
Female	0.535			0.556	0.527	
Race/ethnicity						
White[d]	0.706			0.587	0.750	***
Black	0.200			0.291	0.166	***
Hispanic	0.094			0.122	0.084	
Relationship status						
Currently dating someone	0.346			0.597	0.252	***
Family background						
Two biological parents[d]	0.592			0.490	0.630	***
All other family structures	0.408			0.510	0.370	***
Mother < HS education	0.081			0.102	0.073	
Mother HS graduate[d]	0.290			0.332	0.275	
Mother > HS education	0.560			0.459	0.597	**
Parental monitoring	1.392	0.881	0.00–4.00	1.311	1.422	
Dependent variables (Wave II)						
Had sex	0.272					
Had non-relationship (casual) sex[e]	0.250					
Number of sex partners (past 2 years)[e]	2.301	2.097	1.00–11.00			

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (from t-tests)
a. Variable is grand-mean centered in multivariate analyses.
b. Standard deviations and ranges not shown for dummy variables.
c. Presented for descriptive purposes only (due to high correlation with neighborhood disadvantage, r = 0.81).
d. Indicates reference category.
e. Proportion among Wave I virgins experiencing sexual debut by Wave II.

models involve two levels. At Level 1, which captures within-neighborhood variation in individuals' behavior, the logit associated with adolescent i in neighborhood j engaging in the behavior captured by outcome k, is given by:

$$n_{ijk} = \beta_{0jk} + \sum_{p=4} \beta_{1jkp}(\text{Demographics}_{ijkp}) + \sum_{p=4} \beta_{2jk}(\text{Family background}_{ijk}) + e_{ijk}$$

Between-neighborhood variation is captured at Level 2, by allowing the intercept from Level 1 (β_{0jk}) to vary randomly across neighborhoods. This variation is then modeled as:

$$\beta_{0jk} = \gamma_{00k} + \gamma_{01k}(\text{Normative climate}_{jk}) + \gamma_{02k}(\text{Neighborhood disadvantage}_{jk}) + \mu_{0jk}$$

This is a function of a Level-2 intercept (γ_{00k}), which reflects the average-level of the sexual behavior under consideration across all neighborhoods, the Level-2 independent variables (normative climate and neighborhood disadvantage) for each neighborhood, and an error term unique to the neighborhood (μ_{ojk}), representing the neighborhood-specific deviation. This multilevel framework allows us to test if normative climate in the neighborhood is associated with adolescents' sexual behaviors net of individual-level predictors.

4. Results

Table 1 presents descriptive characteristics of the respondents (Wave I virgins) and neighborhoods in the analytic sample for the model of sexual debut (n = 720 and n = 100, respectively). At the neighborhood level, the normative climate ranges from 2.60, indicating more restrictive or conservative attitudes toward sex, to 11.80, indicating the most permissive attitudes. The grand mean of the sample of neighborhoods is 6.36, suggesting that the sampled neighborhoods are fairly moderate with respect to their sexual norms. The average neighborhood disadvantage scale indicates relatively low disadvantage, with a mean of 15.18.[3] At the individual-level, the sample is almost evenly divided be-

3. Neighborhood racial composition (percent Black residents) is presented in Table 1 for descriptive purposes but is not used in the multivariate analyses, due to its high correlation with neighborhood disadvantage (r = 0.81). Over 50% of respondents resided in neighborhoods where less than 4% of residents were Black.

Table 2. Multilevel logistic regression of the effect of normative climate on the odds of sexual debut, Toledo Adolescent Relationships Study (TARS), Waves I and II, (Level-1 n = 720, Level-2 n = 100).

	OR			
	Model 1	Model 2	Model 3	Model 4
Intercept	0.401***	0.405***	0.406**	0.415**
Level-2 indicators				
Normative climate[a]	1.243***	1.146*	1.161*	1.160*
Neighborhood disadvantage[a]		1.029*	1.010	1.012
Level-1 indicators				
Individual characteristics				
Demographics				
Age[a]			1.611***	1.592***
Male			–	–
Female			0.851	0.854
Race/ethnicity				
White			–	–
Black			1.417	1.442
Hispanic			1.534	1.572
Relationship status				
Currently dating someone			4.344***	4.273***
Family background				
Two biological parents			0.547***	0.536**
All other family structures			–	–
Mother < HS education			0.768	0.783
Mother HS graduate			–	–
Mother > HS education			0.703	0.704
Parental monitoring				0.892
Variance component	0.273	0.178	0.230	0.226
$\chi 2$	130.442*	18.432*	121.250*	120.844*

* $p < 0.05$ (one-tailed tests)
** $p < 0.01$ (one-tailed tests)
*** $p < 0.001$ (one-tailed tests)
a. Variable is grand-mean centered.

tween males and females, and the average age of respondents is about 15. Almost three quarters of respondents are White (70.6%), about one fifth are Black (20.0%), and just over half of the adolescents reside with both biological parents. Adolescents report fairly low parental monitoring, with a sample mean of 1.39 on a scale ranging from 0.00 to 4.00. With regard to our outcomes of interest, 27.2% of adolescents report sexual debut between Waves I and II. Among these sexually experienced youth, 25.0% report engaging in casual (non-relationship) sex and teens with sexual experience reported an average of 2.3 sex partners by the Wave II interview.

We also present a bivariate analysis, comparing Wave I virgins who experienced sexual debut by Wave II with those who did not, across all the independent variables. As Table 1 indicates, respondents who sexually debuted were exposed to normative climates more favorable towards sexual activity than their peers who did not engage in sexual activity (6.41 vs. 5.93, $p < 0.001$, respectively). Further, respondents who sexually debuted lived in neighborhood with significantly higher levels of disadvantage and higher proportions of Black residents. These respondents were also approximately 1 year older. Approximately 59% of sexually active respondents were White, whereas 75% of abstainers were White; a higher proportion of sexually active respondents were Black than among abstainers (29.1% vs. 16.6%). Over half (59.7%) of sexually active youth were dating someone at Wave I, compared to only 25% of abstainers. A higher proportion of abstaining youth resided in two-parent families with mothers who earned more than a high school education.

Respondents in this analytic sample are distributed across 100 neighborhoods. The average neighborhood-level percentage of youth initiating sexual activity between Waves I and II is 17.74%, with a range from 0.00% to 54.54%. That is, Wave I virgins reside in neighborhoods where as few as none of their peers, or as many as 54.54% of their peers, became sexually active between Waves I and II. Note, these percentages only concern youth who were not already sexually active at Wave I (n = 720). If we look at neighborhood levels of sexual activity across all youth participating in the Wave II interview (n = 1037), the neighborhood mean is 51.36%, with a range of 7.14–90.91%. This means that, across the 100 study neighborhoods, an average of 51.36% of the survey participants in a given neighborhood were sexually active by Wave II. The correlation between neighborhood normative climate and neighborhood-level sexual activity by Wave II is r = 0.50 ($p < 0.001$), indicating moderately high consistency between sexual attitudes and sexual behaviors at the neighborhood level.

The effect of neighborhood normative climate on adolescents' sexual debut is examined in Table 2. As Model 1 illustrates, normative climate is positively associated with initiating sex—a 1-unit increase above the grand mean in a neighborhood's normative climate increases adolescents' odds of sexual debut by about 24% [$(1 - \text{Exp}(\beta) * 100$]. The effect of normative climate remains significant after neighborhood disadvantage is added to the model (Model 2), although its effect is slightly attenuated. While past researchers (e.g., Billy et al., 1994; Browning et al., 2008) have suggested that neighborhood disadvantage is a proxy for pro-sex normative climates because permissive attitudes

Table 3. Multilevel logistic regression of the effect of normative climate on the odds of having casual (non-relationship) sex, among sexually active adolescents, Toledo Adolescent Relationships Study (TARS), Waves I and II, (Level-1 n = 505, Level-2 n = 100).

	OR			
	Model 1	Model 2	Model 3	Model 4
Intercept	0.560***	0.560**	0.552*	0.550*
Level-2 indicators				
Normative climate[a]	1.170*	1.190**	1.136*	1.136*
Neighborhood disadvantage[a]		0.993	0.988	0.988
Level-1 indicators				
Individual characteristics				
Demographics				
Age[a]			0.963	0.959
Male			–	–
Female			0.563**	0.565**
Race/ethnicity				
White			–	–
Black			1.191	1.199
Hispanic			0.854	0.861
Relationship status				
Currently dating someone			0.668*	0.667*
Sexually active at Wave I			2.411***	2.402***
Family background				
Two biological parents			0.952	0.953
All other family structures			–	–
Mother < HS education			0.830	0.832
Mother HS graduate			–	–
Mother > HS education			0.993	0.995
Parental monitoring				0.978
Variance component	0.106	0.107	0.093	0.094
$\chi 2$	108.183	107.672	103.781	103.688

* $p < 0.05$ (one-tailed tests)
** $p < 0.01$ (one-tailed tests)
*** $p < 0.001$ (one-tailed tests)
a. Variable is grand-mean centered.

toward sex are often observed in disadvantaged neighborhoods, Model 2 indicates that normative climate and disadvantage each exert *independent* effects on sexual debut. When sociodemographic controls are added (Model 3), we see that age is positively associated with sexual debut, and female respondents are no more or less likely than male respondents to experience debut.

Given recent literature (e.g., Kreager and Staff, 2009) highlighting the continued persistence of the sexual double standard—the notion that boys are permitted greater sexual freedom than girls—we explored a cross-level interaction between normative climate and gender (not shown). The interaction was not significant, suggesting that the effect of normative climate on sexual debut does not differ by gender in this sample. Individuals involved in a dating relationship at Wave I have four times the odds of becoming sexually active, compared to their single counterparts. The effect of neighborhood disadvantage on sexual debut is reduced to nonsignificance in Model 3 because it is mediated by relationship status (neighborhood disadvantage is positively associated with being in a relationship). In the final model, parental monitoring is not associated with sexual debut (Model 4), but youth in two-parent households are less likely to become sexually active than youth in all other family structures. Ancillary analyses (not shown) found that parental monitoring was negatively associated with debut—as monitoring increased, odds of sexual debut decreased; however, this effect was attenuated by youths' relationship status. This may not be surprising, if we assume that youth who are dating experience less parental monitoring than their peers who are not dating.

Table 3 and Table 4 assess whether the neighborhood normative climate influences subsequent sexual behaviors among the youth who had engaged in sex by Wave II—that is, Wave I virgins who experienced sexual debut by Wave II (n = 196) and youth who were already sexually active at Wave I (n = 309).[4]Table 3 shows the odds of casual sexual activity among the 505 youth who were sexually active by Wave II. Because youth who were already sexually active at Wave I may differ from virgins at Wave I who subsequently debuted—and this difference may influence their odds of engaging in casual sex independent of the effect of normative climate—we include a dummy variable to control for *sexually active at Wave I*.[5] Models 1–4 reveal that the effect of normative climate on casual sex is positive and significant among sex-

4. Eight respondents sexually active at Wave I were excluded due to missing information on the casual sex and number of sex partners measures.
5. Models limited only to Wave I virgins who experienced sexual debut at Wave II (n = 196)—a more restrictive test of the effect of normative climate—produced similar results.

Table 4. Multilevel negative binomial regression incident rate ratios for the effect of normative climate on adolescents' number of sex partners, among sexually active adolescents, Toledo Adolescent Relationships Study (TARS), Waves I and II, (Level-1 n = 505, Level-2 n = 100).

	1 Partner vs. 2 or more partners IRR			
	Model 1	Model 2	Model 3	Model 4
Intercept	3.440***	3.440***	2.784***	2.759***
Level-2 indicators				
Normative climate[a]	1.090***	1.089***	1.082**	1.080**
Neighborhood disadvantage[a]		1.000	0.999	0.999
Level-1 indicators				
Individual characteristics				
Demographics				
Age[a]			1.069**	1.061*
Male			–	–
Female			0.786***	0.790***
Race/ethnicity				
White			–	–
Black			0.912	0.924
Hispanic			0.961	0.978
Relationship status				
Currently dating someone			0.942	0.938
Sexually active at Wave I			1.625***	1.615***
Family background				
Two biological parents			0.848*	0.854*
All other family structures			–	–
Mother < HS education			1.110	1.117
Mother HS graduate			–	–
Mother > HS education			1.074	1.077
Parental monitoring				0.958
Variance component				
Within neighborhood	2.069	2.065	1.799	1.808
Between neighborhood	0.035	0.036	0.026	0.025
$\chi 2$	124.276*	124.384*	115.771*	114.297*

* $p < 0.05$ (one-tailed tests)
** $p < 0.01$ (one-tailed tests)
*** $p < 0.001$ (one-tailed tests)
a. Variable is grand-mean centered.

ually active youth. The effect of normative climate on casual sex persists with the inclusion of key control variables. As Model 4 shows, a 1-unit increase above the mean in neighborhood normative climate increases adolescents' odds of casual sex by approximately 14%. Females and youth in a romantic relationship at Wave I are less likely to engage in casual sex, while youth already sexually active at Wave I have twice the odds of engaging in casual sex compared to youth who debuted at Wave II. This may be due to differences in exposure, in that youth sexually active at Wave I have simply had more time to engage in casual sex than youth who became sexually active more recently. Neighborhood disadvantage, although significantly associated with sexual debut, is not associated with the odds of engaging in casual sex.

In Table 4, we examine whether the normative climate affects adolescents' total number of sex partners, computing incident rate ratios (IRR) by exponentiating the negative binomial regression coefficients. Models 1–4 reveal that normative climate is positively associated with the lifetime number of sex partners reported by youth who were sexually active by Wave II. A 1-unit increase in normative climate increases the number of sex partners by 8% (Model 4). As in the models examining casual sex, neighborhood disadvantage is not associated with number of sex partners. Females report 21% fewer sex partners than males, and youth in two biological parent households report about 15% fewer sex partners than youth in other family structures. Those youth who were already sexually active at Wave I, compared to those who debuted after Wave I, report 1.6 more partners—likely because they have had longer to accumulate partners (as noted above). We used negative binomial regression to estimate the effects of normative climate on a count of sex partners; alternative specifications, such as a multinomial logistic regression (comparing 1, 2 and more than 2 sexual partners) produced similar results. Taking together the findings displayed in Table 2, Table 3, and Table 4, it appears that neighborhood normative climate is influential for the decision to first have sex, to engage in casual sex, and the number of partners with whom one has sex. Neighborhood disadvantage, on the other hand, is only significantly associated with sexual debut. It appears, then, that disadvantage exerts an influence on the initial decision to have sex. Once youth have made the decision to engage in sexual activity, the level of disadvantage in their neighborhood does not influence their subsequent sexual activity.

5. Discussion

Wilson (1987, 1996), along with Massey and Denton (1993), has argued that rates of adolescent sexual behavior and premarital childbearing can be linked to characteristics of neighborhoods. Disadvantaged neighborhoods provide contexts in which values conducive to risky sexual behaviors may develop and flourish. Youths in these contexts are at risk for exposure to close friends and less intimate others who exhibit and/or encourage such behaviors (South and Baumer, 2000). Given the importance of peers in adolescence, these networks are contexts particularly likely to generate social capital in terms of pressure, norms, and expectations for behavior; however, these networks do not always foster prosocial behavior, but rather can lead to problematic behavior if there is consensus among network members regarding the appropriateness of such behavior (Haynie, 2002). Additionally, however, youth are influenced not only by their closes friends, but also by their "wider circle"—the various individuals moving through the same social network—and even individuals with whom they need not be directly acquainted.

Using survey data from two waves of the Toledo Adolescent Relationships Study (TARS), the current study examined the effect of the wider normative climate on adolescents' sexual behavior. The normative climate is one type of mechanism through which communities are theorized to affect behavior—it represents the emergence, maintenance, and transmission of social norms that influence preferences for and meanings of particular behaviors (in this case, sexual debut, casual sex, and number of sex partners). It captures the behaviors, attitudes, and values to which youth are exposed and most attuned. Analyses revealed that the attitudes of neighborhood peers do influence adolescents' sexual debut, and these effects exist independent of the impact of structural disadvantage, parenting, and individual correlates such as age, race, gender, and relationship status. Even once individuals have transitioned into sexual activity, normative climates continue to influence their likelihood of engaging in casual sex, and their number of sex partners—sexually permissive normative climates are associated with greater odds of engaging in casual sex and greater numbers of sex partners. Our results highlight the usefulness of examining neighborhood peer cultures independent of the attitudes of individual respondents. The normative climate influenced the sexual behaviors of previously sexually active youth as well as those who recently debuted, and analyses limited only to adolescents who were virgins at Wave I still revealed an effect of their normative climate.

There are a few limitations to the study worth noting. First, these data are limited to a sample of teens in Lucas County, Ohio. While adolescents in this area share similar sociodemographic profiles to national estimates of adolescent characteristics, we recognize that the findings reported herein are limited to one geographic area; however, we argue that a strength of this analysis is that our sample contains a variety of neighborhood types—urban and rural, affluent and disadvantaged. Second, we measured neighborhoods at the census tract level. While a common approach, this methodology is not without its limitations (see Hipp and Perrin, 2006; Sampson et al., 2002). For instance, Hipp (2007) notes that measuring neighborhoods at the tract level assumes homogeneity among the blocks within that tract—an assumption that may not be tenable, and may obscure researchers' ability to accurately detect neighborhood effects. Further, discrepancies exist between resident-defined and Census-defined neighborhood boundaries, representing another source of bias (e.g., Coulton et al., 2001). Therefore, readers must be cautious in assessing the "true effects" of neighborhood characteristics.

Third, our analyses focused on the attitudes of neighborhood peers; however, it may also be important to also examine the attitudes and behaviors of parents and other adults in the neighborhood, an approach used by Musick and colleagues (2008) in their study of adolescent substance use, or to focus on school normative climates, instead of (or in addition to) neighborhood normative climates (see, Teitler and Weiss, 2000). Relatedly, we must recognize that there are limitations to approximating group-level norms by aggregating individual attitudes (e.g., Duncan and Raudenbush, 1999; O'Brien, 1990), and individual attitudes may not be equivalent to neighborhood-level norms. Neighborhoods are often characterized by a fairly heterogeneous mix of value systems, and comprised of competing (or at least diverse) norms and values (Harding, 2007; see also, Shaw and McKay, 1942). Therefore, aggregating the attitudes of respondents' similarly-aged peers is an *approximation* of the normative climate to which these adolescents are most attuned. Also, as was necessary in creating the Level 2 dataset for the HLM analyses, respondents' own attitudes were included in the measure of their neighborhood normative climate; thus, our chances of finding an effect of normative climate may have been influenced by the inclusion of individuals' attitudes in this measure. However, adolescents' own attitudes are likely shaped by their neighborhood norms, and as such, it is difficult (and may not be appropriate) to attempt to disentangle the two. Finally, the respondents in this sample were, on average, fairly young, and thus the majority of them did not initiate sexual activity. Future research would benefit by following adolescents longer, exploring the effect of normative climates farther through late adolescence and the transition to adulthood, and also assessing the effect of additional individual characteristics such as religiosity or relationship quality.

Notwithstanding these limitations, the current study shows that neighborhood peer norms favorable to sexual activity influence adolescents' likelihood of initiating sex, engaging in non-relationship sexual activity, and accumulating sex partners. We find that these attitudes are influential across various types of neighborhoods, as the TARS study in general, and the analytic sample specifically, were not limited to disadvantaged urban youth, and the effect of normative climate remained significant net of neighborhood disadvantage. The current study attempted to advance research on the link between neighborhood characteristics and adolescent sexual behaviors by operationalizing adolescents' neighborhood peer networks in a way that captures objective influence both from proximate friends, and more distal peers. Additionally, the present analyses illustrated the importance of parents and the competing roles of peer influence, given that peers may encourage sexual activity while parents (particularly through parental monitoring)

can discourage sexual activity. Future research should continue to explore aggregate measurement of normative climates, and additional risk and protective factors that may intervene between adolescents' normative climate and their sexual behavior. Placing these peer networks in the larger context of influential social and cultural factors should enable us to identify the multiple pathways through which networks exert their effects on individuals, and how structural and cultural factors affect these network dynamics.

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